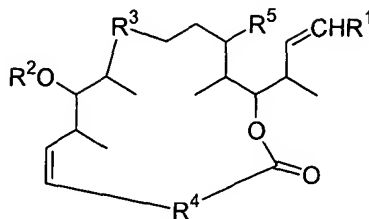


WHAT IS CLAIMED IS:

1. A compound of the following structure



wherein  $R^1$  is H, an alkyl group, an aryl group, an alkenyl group, an alkynyl group, or a halogen atom;

$R^2$  is H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ ;

$R^a$ ,  $R^b$  and  $R^c$  are independently an alkyl group or an aryl group;

$R^d$  is an alkyl group, an aryl group, an alkoxyalkyl group,  $-\text{R}^i\text{SiR}^a\text{R}^b\text{R}^c$  or a benzyl group, wherein  $R^i$  is an alkylene group;

$R^e$  is an alkyl group, an allyl group, a benzyl group, an aryl group, an alkoxy group, or  $-\text{NR}^g\text{R}^h$ , wherein  $R^g$  and  $R^h$  are independently H, an alkyl group or an aryl group;

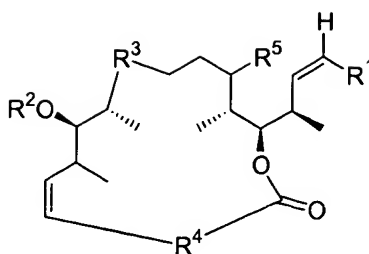
$R^3$  is  $(\text{CH}_2)_n$  where  $n$  is an integer in the range of 0 to 5,  $-\text{CH}_2\text{CH}(\text{CH}_3)-$ ,  $-\text{CH}=\text{CH}-$ ,  $-\text{CH}=\text{C}(\text{CH}_3)-$ , or  $-\text{C}\equiv\text{C}-$ ;

$R^4$  is  $(\text{CH}_2)_p$  where  $p$  is an integer in the range of 4 to 12,  $-(\text{CHR}^{k1})_{y1}(\text{CHR}^{k2})_{y2}(\text{CHR}^{k3})_{y3}(\text{CHR}^{k4})_{y4}(\text{CHR}^{k5})_{y5}\text{C}(\text{R}^{s1})=\text{C}(\text{R}^{s2})\text{C}(\text{R}^{s3})=\text{C}(\text{R}^{s4})-$ ,  $-(\text{CHR}^{k1})_{y1}(\text{CHR}^{k2})_{y2}(\text{CHR}^{k3})_{y3}(\text{CHR}^{k4})_{y4}(\text{CHR}^{k5})_{y5}\text{CH}(\text{R}^{s1})\text{CH}(\text{R}^{s2})\text{C}(\text{R}^{s3})=\text{C}(\text{R}^{s4})-$ ,  $-(\text{CHR}^{k1})_{y1}(\text{CHR}^{k2})_{y2}(\text{CHR}^{k3})_{y3}(\text{CHR}^{k4})_{y4}(\text{CHR}^{k5})_{y5}\text{C}(\text{R}^{s1})=\text{C}(\text{R}^{s2})\text{CH}(\text{R}^{s3})\text{CH}(\text{R}^{s4})-$ ,  $-(\text{CHR}^{k1})_{y1}(\text{CHR}^{k2})_{y2}(\text{CHR}^{k3})_{y3}(\text{CHR}^{k4})_{y4}(\text{CHR}^{k5})_{y5}\text{CH}(\text{R}^{s1})\text{CH}(\text{R}^{s2})\text{CH}(\text{R}^{s3})\text{CH}(\text{R}^{s4})-$ ,

wherein  $y1$  and  $y2$  are 1 and  $y3$ ,  $y4$  and  $y5$  are independently 0 or 1,  $R^{k1}$ ,  $R^{k2}$ ,  $R^{k3}$ ,  $R^{k4}$  and  $R^{k5}$  are independently H,  $\text{CH}_3$ , or  $\text{OR}^{2a}$ , and  $R^{s1}$ ,  $R^{s2}$ ,  $R^{s3}$ , and  $R^{s4}$  are independently H or  $\text{CH}_3$ , wherein  $R^{2a}$  is H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ ; and

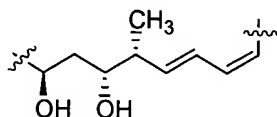
$R^5$  is H or  $\text{OR}^{2b}$ , wherein  $R^{2b}$  is H, an alkyl group, an aryl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ ; provided that the compound is not dictyostatin 1.

2. The compound of claim 1 with the following stereostructure, or its enantiomer

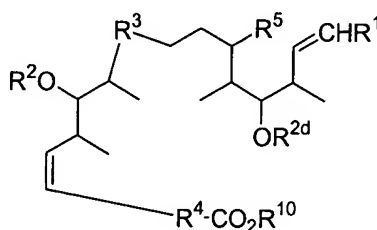


wherein  $R^1$  is alkenyl;  $R^2$  is H;  $R^3$  is  $-\text{CH}_2\text{CH}(\text{CH}_3)$  or  $-\text{CH}=\text{C}(\text{CH}_3)$ ; and  $R^4$  is  $-(\text{CHR}^{k1})_{y1}(\text{CHR}^{k2})_{y2}(\text{CHR}^{k3})_{y3}(\text{CHR}^{k4})_{y4}(\text{CHR}^{k5})_{y5}\text{C}(\text{R}^{s1})=\text{C}(\text{R}^{s2})\text{C}(\text{R}^{s3})=\text{C}(\text{R}^{s4})-$  wherein  $y1$ - $y4$  are 1,  $y5$  is 0,  $R^{k1}$  and  $R^{k3}$  are OH,  $R^{k2}$  is H,  $R^{k4}$  is  $\text{CH}_3$ ,  $R^{s1}$ ,  $R^{s2}$ ,  $R^{s3}$  and  $R^{s4}$  are H, and  $R^5$  is OH.

3. The compound of claim 2 wherein  $R^1$  is  $-\text{CH}=\text{CH}_2$  and  $R^4$  is



4. A compound of the following structure



wherein  $R^1$  is H, an alkyl group, an aryl group, an alkenyl group, an alkynyl group, or a halogen atom;

$R^2$  and  $R^{2d}$  are independently H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ ;

$R^a$ ,  $R^b$  and  $R^c$  are independently an alkyl group or an aryl group;

$R^d$  is an alkyl group, an aryl group, an alkoxyalkyl group,  $-\text{R}^i\text{SiR}^a\text{R}^b\text{R}^c$  or a benzyl group, wherein  $R^i$  is an alkylene group;

$R^e$  is an alkyl group, an allyl group, a benzyl group, an aryl group, an alkoxy group, or  $-NR^gR^h$ , wherein  $R^g$  and  $R^h$  are independently H, an alkyl group or an aryl group;

$R^3$  is  $(CH_2)_n$  where  $n$  is an integer in the range of 0 to 5,  $-CH_2CH(CH_3)-$ ,  $-CH=CH-$ ,  $-CH=C(CH_3)-$ , or  $-C\equiv C-$ ;

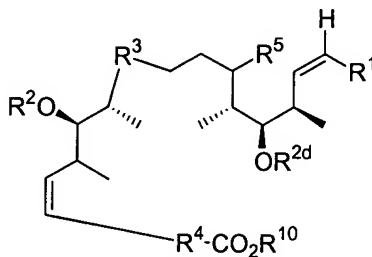
$R^4$  is  $(CH_2)_p$  where  $p$  is an integer in the range of 4 to 12,  $-(CHR^{k1})_{y1}(CHR^{k2})_{y2}(CHR^{k3})_{y3}(CHR^{k4})_{y4}(CHR^{k5})_{y5}C(R^{s1})=C(R^{s2})C(R^{s3})=C(R^{s4})-$ ,  $-(CHR^{k1})_{y1}(CHR^{k2})_{y2}(CHR^{k3})_{y3}(CHR^{k4})_{y4}(CHR^{k5})_{y5}CH(R^{s1})CH(R^{s2})C(R^{s3})=C(R^{s4})-$ ,  $-(CHR^{k1})_{y1}(CHR^{k2})_{y2}(CHR^{k3})_{y3}(CHR^{k4})_{y4}(CHR^{k5})_{y5}C(R^{s1})=C(R^{s2})CH(R^{s3})CH(R^{s4})-$ ,  $-(CHR^{k1})_{y1}(CHR^{k2})_{y2}(CHR^{k3})_{y3}(CHR^{k4})_{y4}(CHR^{k5})_{y5}CH(R^{s1})CH(R^{s2})CH(R^{s3})CH(R^{s4})-$ ,

wherein  $y1$  and  $y2$  are 1 and  $y3$ ,  $y4$  and  $y5$  are independently 0 or 1,  $R^{k1}$ ,  $R^{k2}$ ,  $R^{k3}$ ,  $R^{k4}$  and  $R^{k5}$  are independently H,  $-CH_3$ , or  $OR^{2a}$ , and  $R^{s1}$ ,  $R^{s2}$ ,  $R^{s3}$ , and  $R^{s4}$  are independently H or  $CH_3$ , wherein  $R^{2a}$  is H, an alkyl group, an aryl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ , or  $COR^e$ ; and

$R^5$  is H or  $OR^{2b}$ , wherein  $R^{2b}$  is H, an alkyl group, an aryl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ , or  $COR^e$ ; and

$R^{10}$  is H or alkyl.

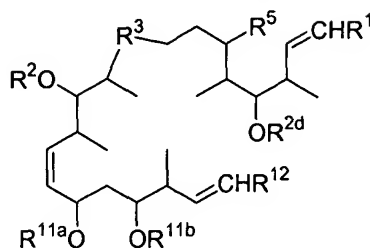
5. The compound of claim 4 with the following stereostructure, or its enantiomer



wherein  $R^1$  is alkenyl;  $R^2$  is H;  $R^{2d}$  is H,  $OC(O)CH_3$  or  $OC(O)NR^gR^h$  wherein  $R^g$  and  $R^h$  are independently H, an alkyl group or an aryl group;  $R^3$  is  $CH_2CH(CH_3)$  or  $CH=C(CH_3)$ ; and  $R^4$  is  $-(CHR^{k1})_{y1}(CHR^{k2})_{y2}(CHR^{k3})_{y3}(CHR^{k4})_{y4}(CHR^{k5})_{y5}C(R^{s1})=C(R^{s2})C(R^{s3})=C(R^{s4})-$  wherein  $y1$ - $y4$  are 1,  $y5$  is 0,  $R^{k1}$  and  $R^{k3}$  are OH,  $R^{k2}$  is H,  $R^{k4}$  is  $CH_3$ ,  $R^{s1}$ ,  $R^{s2}$ ,  $R^{s3}$  and  $R^{s4}$  are H,  $R^5$  is OH; and  $R^{10}$  is H or alkyl.

6. The compound of claim 5 wherein  $R^1$  is  $-CH=CH_2$ , and  $R^{2d}$  is H,  $OC(O)CH_3$  or  $OC(O)NH_2$ .

7. A compound of the following structure:



wherein  $R^1$  is H, an alkyl group, an aryl group, an alkenyl group, an alkynyl group, or a halogen atom;

$R^2$  and  $R^{2d}$  are independently H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ ;

$R^a$ ,  $R^b$  and  $R^c$  are independently an alkyl group or an aryl group;

$R^d$  is an alkyl group, an aryl group, an alkoxyalkyl group,  $-\text{R}^i\text{SiR}^a\text{R}^b\text{R}^c$  or a benzyl group, wherein  $R^i$  is an alkylene group;

$R^e$  is an alkyl group, an allyl group, a benzyl group, an aryl group, an alkoxy group, or  $-\text{NR}^g\text{R}^h$ , wherein  $R^g$  and  $R^h$  are independently H, an alkyl group or an aryl group;

$R^3$  is  $(\text{CH}_2)_n$  where  $n$  is an integer in the range of 0 to 5,  $-\text{CH}_2\text{CH}(\text{CH}_3)-$ ,  $-\text{CH}=\text{CH}-$ ,  $-\text{CH}=\text{C}(\text{CH}_3)-$ , or  $-\text{C}\equiv\text{C}-$ ;

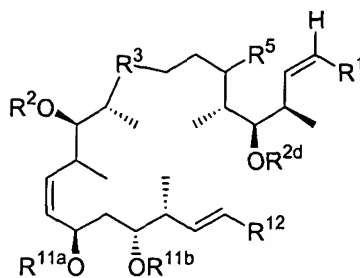
$R^5$  is H or  $\text{OR}^{2b}$ , wherein  $R^{2b}$  is H, an alkyl group, an aryl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ ;

$R^{11a}$  and  $R^{11b}$  are independently H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ ,  $\text{COR}^e$ , or  $R^{11a}$  and  $R^{11b}$  together form a portion of six-membered acetal ring incorporating  $\text{CR}^u\text{R}^v$ ;

$R^1$  and  $R^u$  are independently H, an alkyl group, an aryl group or an alkoxyaryl group; and

$R^{12}$  is a halogen atom,  $\text{CH}_2\text{OR}^{2c}$ ,  $\text{CHO}$ ,  $\text{CO}_2\text{R}^{10}$ ,  $\text{CH}=\text{CHCH}_2\text{OR}^{2c}$ ,  $\text{CH}=\text{CHCHO}$ , wherein  $R^{2c}$  is H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ , and  $R^{10}$  is H or alkyl.

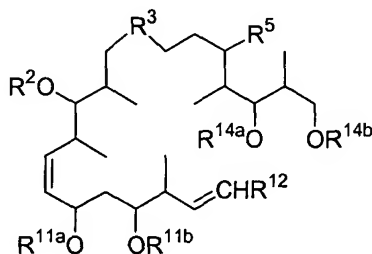
8. A compound of Claim 7 with the following stereostructure, or its enantiomer



wherein R<sup>1</sup> is alkenyl; R<sup>2d</sup> is H, OC(O)CH<sub>3</sub> or OC(O)NR<sup>g</sup>R<sup>h</sup> wherein R<sup>g</sup> and R<sup>h</sup> are independently H, an alkyl group or an aryl group; R<sup>3</sup> is CH<sub>2</sub>CH(CH<sub>3</sub>) or CH=C(CH<sub>3</sub>); R<sup>11a</sup> and R<sup>11b</sup> are H or together form a portion of a six-membered acetal ring containing C(H)(*p*-C<sub>6</sub>H<sub>4</sub>OCH<sub>3</sub>) or C(CH<sub>3</sub>)<sub>2</sub>; R<sup>12</sup> is a halogen atom, CH<sub>2</sub>OR<sup>2c</sup>, CHO, CO<sub>2</sub>R<sup>10</sup>, CH=CHCH<sub>2</sub>OR<sup>2c</sup>, CH=CHCHO, wherein R<sup>2c</sup> is H, an alkyl group, a benzyl group, a trityl group, -SiR<sup>a</sup>R<sup>b</sup>R<sup>c</sup>, CH<sub>2</sub>OR<sup>d</sup>, or COR<sup>e</sup>, and R<sup>10</sup> is H or alkyl.

9. The compound of claim 8 wherein R<sup>1</sup> is -CH=CH<sub>2</sub>, R<sup>2d</sup> is H, -OC(O)CH<sub>3</sub> or -OC(O)NH<sub>2</sub>, and R<sup>12</sup> is -CH<sub>2</sub>OH, -CHO or -CO<sub>2</sub>R<sup>10</sup>.

10. A compound having the following structure:



wherein R<sup>2</sup> is H, an alkyl group, a benzyl group, a trityl group, -SiR<sup>a</sup>R<sup>b</sup>R<sup>c</sup>, CH<sub>2</sub>OR<sup>d</sup>, or COR<sup>e</sup>; R<sup>a</sup>, R<sup>b</sup> and R<sup>c</sup> are independently an alkyl group or an aryl group; R<sup>d</sup> is an alkyl group, an aryl group, an alkoxyalkyl group, -R<sup>i</sup>SiR<sup>a</sup>R<sup>b</sup>R<sup>c</sup> or a benzyl group, wherein R<sup>i</sup> is an alkylene group; R<sup>e</sup> is an alkyl group, an allyl group, a benzyl group, an aryl group, an alkoxy group, or -NR<sup>g</sup>R<sup>h</sup>, wherein R<sup>g</sup> and R<sup>h</sup> are independently H, an alkyl group or an aryl group; R<sup>3</sup> is (CH<sub>2</sub>)<sub>n</sub> where n is an integer in the range of 0 to 5, -CH<sub>2</sub>CH(CH<sub>3</sub>)-, -CH=CH-, -CH=C(CH<sub>3</sub>)-, or -C≡C-;

$R^5$  is H or  $OR^{2b}$ , wherein  $R^{2b}$  is H, an alkyl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ , or  $COR^e$ ;

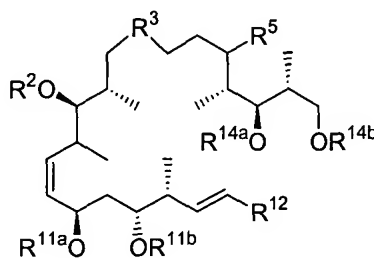
$R^{11a}$  and  $R^{11b}$  are independently H, an alkyl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ ,  $COR^e$ , or  $R^{11a}$  and  $R^{11b}$  together form a portion of six-membered acetal ring containing  $CR^tR^u$ ;

$R^t$  and  $R^u$  are independently H, an alkyl group, an aryl group or an alkoxyaryl group;

$R^{12}$  is a halogen atom,  $CH_2OR^{2c}$ ,  $CHO$ ,  $CO_2R^{10}$ ,  $CH=CHCH_2OR^{2c}$  or  $CH=CHCHO$ ,  $CH=CHCO_2R^{10}$ , wherein  $R^{2c}$  is H, an alkyl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ , or  $COR^e$ , and  $R^{10}$  is H or alkyl; and

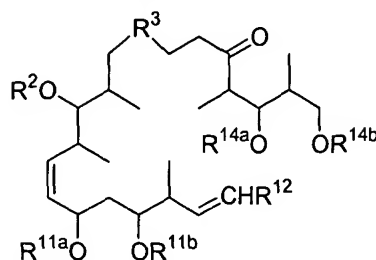
$R^{14a}$  and  $R^{14b}$  are independently H, an alkyl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ ,  $COR^e$ , or  $R^{14a}$  and  $R^{14b}$  together form a six-membered ring containing  $CR^vR^w$ , wherein  $R^v$  and  $R^w$  are independently H, an alkyl group, an aryl group or an alkoxyaryl group.

11. The compound of Claim 10 with the following stereostructure, or its enantiomer



$R^2$  is H;  $R^3$  is  $CH_2CH(CH_3)$  or  $CH=C(CH_3)$ ;  $R^{11a}$  and  $R^{11b}$  are H or together form a portion of a six-membered acetal ring containing  $C(H)(p-C_6H_4OCH_3)$  or  $C(CH_3)_2$ ;  $R^{12}$  is a halogen atom,  $CH_2OR^{2c}$ ,  $CHO$ ,  $CO_2R^{10}$ ,  $CH=CHCH_2OR^{2c}$ ,  $CH=CHCHO$  or  $CH=CHCO_2R^{10}$ , wherein  $R^{2c}$  is H, an alkyl group, an aryl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ , or  $COR^e$ , and  $R^{10}$  is H or alkyl; and  $R^{14a}$  and  $R^{14b}$  are H or together form a portion of a six-membered acetal ring containing  $C(H)(p-C_6H_4OCH_3)$  or  $C(CH_3)_2$ .

12. A compound having the following formula



wherein  $R^1$  is H, an alkyl group, an aryl group, an alkenyl group, an alkynyl group, or a halogen atom;

$R^2$  is H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ ;

$R^a$ ,  $R^b$  and  $R^c$  are independently an alkyl group or an aryl group;

$R^d$  is an alkyl group, an aryl group, an alkoxyalkyl group,  $-\text{R}^i\text{SiR}^a\text{R}^b\text{R}^c$  or a benzyl group, wherein  $R^i$  is an alkylene group;

$R^e$  is an alkyl group, an allyl group, a benzyl group, an aryl group, an alkoxy group, or  $-\text{NR}^g\text{R}^h$ , wherein  $R^g$  and  $R^h$  are independently H, an alkyl group or an aryl group;

$R^3$  is  $(\text{CH}_2)_n$  where  $n$  is an integer in the range of 0 to 5,  $-\text{CH}_2\text{CH}(\text{CH}_3)-$ ,  $-\text{CH}=\text{CH}-$ ,  $-\text{CH}=\text{C}(\text{CH}_3)-$ , or  $-\text{C}\equiv\text{C}-$ ;

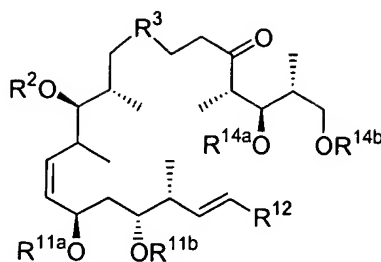
$R^{11a}$  and  $R^{11b}$  are independently H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ ,  $\text{COR}^e$ , or  $R^{11a}$  and  $R^{11b}$  together form a portion of six-membered acetal ring containing  $\text{CR}^t\text{R}^u$ ;

$R^t$  and  $R^u$  are independently H, an alkyl group, an aryl group or an alkoxyaryl group;

$R^{12}$  is a halogen atom,  $\text{CH}_2\text{OR}^{2c}$ ,  $\text{CHO}$ ,  $\text{CO}_2\text{R}^{10}$ ,  $\text{CH}=\text{CHCH}_2\text{OR}^{2c}$ ,  $\text{CH}=\text{CHCHO}$  or  $\text{CH}=\text{CHCO}_2\text{R}^{10}$ , wherein  $R^{2c}$  is H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ , and  $R^{10}$  is H or alkyl; and

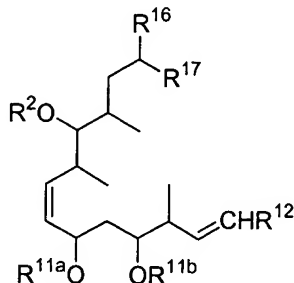
$R^{14a}$  and  $R^{14b}$  are independently H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ ,  $\text{COR}^e$ , or  $R^{14a}$  and  $R^{14b}$  together form a six-membered ring containing  $\text{CR}^v\text{R}^w$ , wherein  $R^v$  and  $R^w$  are independently H, an alkyl group, an aryl group or an alkoxyaryl group.

13. The compound of claim 12 with the following stereostructure, or its enantiomer



wherein  $R^3$  is  $CH_2CH(CH_3)$  or  $CH=C(CH_3)$ ;  $R^{11a}$  and  $R^{11b}$  are H or together form a portion of a six-membered acetal ring containing  $C(H)(p-C_6H_4OCH_3)$  or  $C(CH_3)_2$ ;  $R^{12}$  is a halogen atom,  $CH_2OR^{2c}$ ,  $CHO$ ,  $CO_2R^{10}$ ,  $CH=CHCH_2OR^{2c}$ ,  $CH=CHCHO$  or  $CH=CHCO_2R^{10}$ , wherein  $R^{2c}$  is H, an alkyl group, an aryl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ , or  $COR^e$ , and  $R^{10}$  is H or alkyl; and  $R^{14a}$  and  $R^{14b}$  are H or together form a portion of a six-membered acetal ring containing  $C(H)(p-C_6H_4OCH_3)$  or  $C(CH_3)_2$ .

14. A compound having the following formula



wherein  $R^2$  is H, an alkyl group, an aryl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ , or  $COR^e$ ;

$R^a$ ,  $R^b$  and  $R^c$  are independently an alkyl group or an aryl group;

$R^d$  is an alkyl group, an aryl group, an alkoxyalkyl group,  $-R^iSiR^aR^bR^c$  or a benzyl group, wherein  $R^i$  is an alkylene group;

$R^e$  is an alkyl group, an allyl group, a benzyl group, an aryl group, an alkoxy group, or  $-NR^gR^h$ , wherein  $R^g$  and  $R^h$  are independently H, an alkyl group or an aryl group;

$R^{11a}$  and  $R^{11b}$  are independently H, an alkyl group, and aryl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ ,  $COR^e$ , or  $R^{11a}$  and  $R^{11b}$  together form a portion of six-membered acetal ring containing  $CR^tR^u$ ;



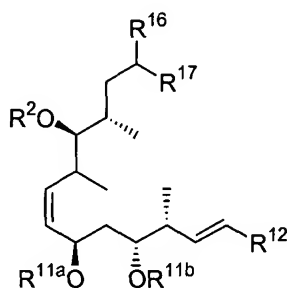
$R^t$  and  $R^u$  are independently H, an alkyl group or an aryl group;

$R^{12}$  is a halogen atom,  $\text{CH}_2\text{OR}^{2c}$ ,  $\text{CHO}$ ,  $\text{CO}_2\text{R}^{10}$ ,  $\text{CH}=\text{CHCH}_2\text{OR}^{2c}$ ,  $\text{CH}=\text{CHCHO}$  or  $\text{CH}=\text{CHCO}_2\text{R}^{10}$ , wherein  $R^{2c}$  is H, an alkyl group, an aryl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ , and  $R^{10}$  is H or alkyl;

$R^{16}$  is H or alkyl; and

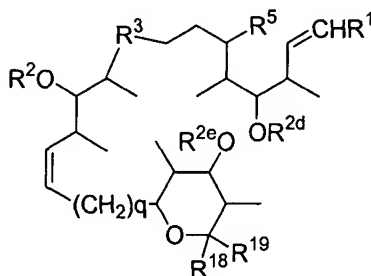
$R^{17}$  is  $\text{CH}_2\text{OR}^{2f}$ ,  $\text{CHO}$ ,  $\text{CO}_2\text{R}^{10}$ , wherein  $R^{2f}$  is H, an alkyl group, an aryl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ .

15. The compound of claim 14 with the following stereostructure, or its enantiomer



wherein  $R^2$  is H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ ,  $R^{11a}$  and  $R^{11b}$  are H or together form a portion of a six-membered acetal ring containing  $\text{C(H)}(p\text{-C}_6\text{H}_4\text{OCH}_3)$  or  $\text{C(CH}_3)_2$ .

16. A compound having the following formula



wherein  $R^1$  is H, an alkyl group, an aryl group, an alkenyl group, an alkynyl group, or a halogen atom;

$R^2$ ,  $R^{2d}$  and  $R^{2e}$  are independently H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ ;

$R^a$ ,  $R^b$  and  $R^c$  are independently an alkyl group or an aryl group;

$R^d$  is an alkyl group, an aryl group, an alkoxyalkyl group,  $-R^iSiR^aR^bR^c$  or a benzyl group, wherein  $R^i$  is an alkylene group;

$R^e$  is an alkyl group, an allyl group, a benzyl group, an aryl group, an alkoxy group, or  $-NR^gR^h$ , wherein  $R^g$  and  $R^h$  are independently H, an alkyl group or an aryl group;

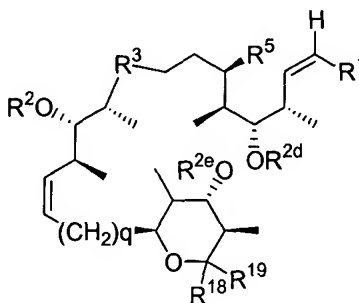
$R^3$  is  $(CH_2)_n$  where n is an integer in the range of 0 to 5,  $-CH_2CH(CH_3)-$ ,  $-CH=CH-$ ,  $-CH=C(CH_3)-$ , or  $-C\equiv C-$ ;

$R^5$  is H or  $OR^{2b}$ , wherein  $R^{2b}$  is H, an alkyl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ , or  $COR^e$ ;

q is an integer in the range of 2 to 5;

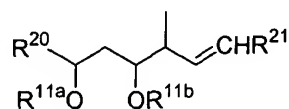
$R^{18}$  is H, and  $R^{19}$  is hydroxy, alkoxy or  $-SR^z$ , wherein  $R^z$  is an alkyl group or an aryl group, or  $R^{18}$  and  $R^{19}$  taken together are =O.

17. The compound of claim 16 with the following stereostructure, or its enantiomer



18. The compound of Claim 17 where wherein  $R^1$  is a  $CH=CH_2$  and  $R^3$  is  $(Z)-CH=CH-$ , or  $-CH_2CH_2-$ .

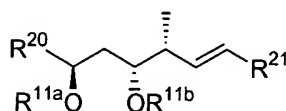
19. A compound having the following structure



$R^{11a}$  and  $R^{11b}$  are independently H, an alkyl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ ,  $COR^e$ , or  $R^{11a}$  and  $R^{11b}$  together form a portion of six-membered acetal ring containing  $CR^tR^u$ ;

$R^t$  and  $R^u$  are independently H, an alkyl group, an aryl group or an alkoxyaryl group;  
 $R^a$ ,  $R^b$  and  $R^c$  are independently an alkyl group or an aryl group;  
 $R^d$  is an alkyl group, an aryl group, an alkoxyalkyl group,  $-R^iSiR^aR^bR^c$  or a benzyl group, wherein  $R^i$  is an alkylene group;  
 $R^e$  is an alkyl group, an allyl group, a benzyl group, an aryl group, an alkoxy group, or  $-NR^gR^h$ , wherein  $R^g$  and  $R^h$  are independently H, an alkyl group or an aryl group;  
 $R^{20}$  is  $CH_2OR^{2g}$ ,  $CHO$ ,  $CO_2R^{10}$ ; wherein  $R^{2g}$  is H, an alkyl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ , or  $COR^e$ , and wherein  $R^{10}$  is H or alkyl; and  
 $R^{21}$  is a halogen atom,  $CH_2OR^{2c}$ ,  $CHO$ ,  $CO_2R^{10a}$ ,  $CH=CHCH_2OR^{2c}$ ,  $CH=CHCHO$  or  $CH=CHCO_2R^{10}$ , wherein  $R^{2c}$  is H, an alkyl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ , or  $COR^e$ , and wherein  $R^{10a}$  is H or alkyl.

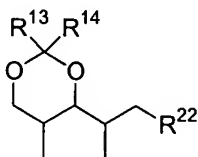
20. The compound of claim 19 with the following stereostructure, or its enantiomer



21. The compound of claim 20 where  $R^{11a}$  and  $R^{11b}$  are H or together form a portion of a six-membered acetal ring containing  $C(H)(p-C_6H_4OCH_3)$  or  $C(CH_3)_2$ .

22. The compound of claim 21 wherein  $R^1$  is  $CH=CH_2$ , and  $R^{21}$  is  $CH_2OH$ ,  $CHO$  or  $CO_2R^{10}$ .

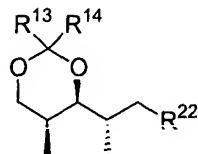
23. A compound having the following formula



wherein  $R^{13}$  is H or an alkyl group,  $R^{14}$  is H, an alkyl group, an aryl group or an alkoxyaryl group, and  $R^{22}$  is a halogen atom or  $-P(Ar)_3X$ , wherein X is a counteranion selected from the groups halide, tetrafluoroborate, hexafluorophosphate and sulfonate, provided that when  $R^{13}$  and  $R^{14}$  are methyl groups, X is not I.

24. A compound of claim 23 provided that when  $R^{13}$  and  $R^{14}$  are alkyl groups, X is not halogen.

25. The compound of claim 23 with the following stereostructure, or its enantiomer

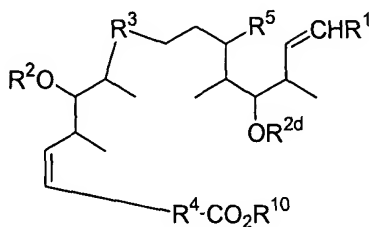


wherein  $R^{13}$  is H or an alkyl group, and  $R^{14}$  is H, an alkyl group, an aryl group or an alkoxyaryl group,  $R^{22}$  is a halogen atom or  $-P(Ar)_3X$ , wherein X is a counteranion selected from the groups halide, tetrafluoroborate, hexafluorophosphate and sulfonate, provided that when  $R^{13}$  and  $R^{14}$  are methyl groups, X is not I.

26. The compound of claim 25 wherein  $R^{13}$  is H,  $R^{14}$  is aryl, and  $R^{22}$  is  $P(C_6H_5)_3X$ .

27. The compound of claim 25 wherein  $R^{14}$  is  $C_6H_4-p-OCH_3$ .

28. A process for conversion of a first compound with the formula



wherein  $R^1$  is H, an alkyl group, an aryl group, an alkenyl group, an alkynyl group, or a halogen atom;

$R^2$  is H, an alkyl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ , or  $COR^e$ ;

$R^{2d}$  is H

$R^a$ ,  $R^b$  and  $R^c$  are independently an alkyl group or an aryl group;

$R^d$  is an alkyl group, an aryl group, an alkoxyalkyl group,  $-R^iSiR^aR^bR^c$  or a benzyl group, wherein  $R^i$  is an alkylene group;

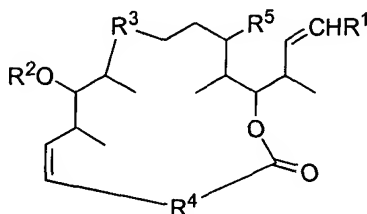
$R^e$  is an alkyl group, an allyl group, a benzyl group, an aryl group, an alkoxy group, or  $-NR^gR^h$ , wherein  $R^g$  and  $R^h$  are independently H, an alkyl group or an aryl group;

$R^3$  is  $(CH_2)_n$  where n is an integer in the range of 0 to 5,  $-CH_2CH(CH_3)-$ ,  $-CH=CH-$ ,  $-CH=C(CH_3)-$ , or  $-C\equiv C-$ ;

$R^4$  is  $(CH_2)_p$  where p is an integer in the range of 4 to 12,  $-(CHR^{k1})_{y1}(CHR^{k2})_{y2}(CHR^{k3})_{y3}(CHR^{k4})_{y4}(CHR^{k5})_{y5}C(R^{s1})=C(R^{s2})C(R^{s3})=C(R^{s4})-$ ,  $-(CHR^{k1})_{y1}(CHR^{k2})_{y2}(CHR^{k3})_{y3}(CHR^{k4})_{y4}(CHR^{k5})_{y5}CH(R^{s1})CH(R^{s2})C(R^{s3})=C(R^{s4})-$ ,  $-(CHR^{k1})_{y1}(CHR^{k2})_{y2}(CHR^{k3})_{y3}(CHR^{k4})_{y4}(CHR^{k5})_{y5}C(R^{s1})=C(R^{s2})CH(R^{s3})CH(R^{s4})-$ ,  $-(CHR^{k1})_{y1}(CHR^{k2})_{y2}(CHR^{k3})_{y3}(CHR^{k4})_{y4}(CHR^{k5})_{y5}CH(R^{s1})CH(R^{s2})CH(R^{s3})CH(R^{s4})-$ , wherein  $y1$  and  $y2$  are 1 and  $y3$ ,  $y4$  and  $y5$  are independently 0 or 1,  $R^{k1}$ ,  $R^{k2}$ ,  $R^{k3}$ ,  $R^{k4}$  and  $R^{k5}$  are independently H,  $CH_3$ , or  $OR^{2a}$ , and  $R^{s1}$ ,  $R^{s2}$ ,  $R^{s3}$ ,  $R^{s4}$  are independently H or  $CH_3$ , wherein  $R^{2a}$  is H, an alkyl group, an aryl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ , or  $COR^e$ ;

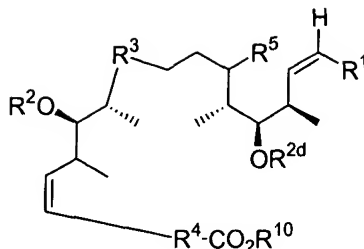
$R^5$  is H or  $OR^{2b}$ , wherein  $R^{2b}$  is H, an alkyl group, an aryl group, a benzyl group, a trityl group,  $-SiR^aR^bR^c$ ,  $CH_2OR^d$ , or  $COR^e$ ; and  $R^{10}$  is H;

to a second compound with the formula



comprising the step of reacting the first compound under conditions suitable to effect macrolactonization.

29. The process of claim 28 for conversion of a compound with the following stereostructure or its enantiomer



wherein  $R^1$  is H, an alkyl group, an alkenyl group, an alkynyl group, or a halogen atom;

$R^2$  is H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ ;

$R^{2d}$  is H

$R^a$ ,  $R^b$  and  $R^c$  are independently an alkyl group or an aryl group;

$R^d$  is an alkyl group, an aryl group, an alkoxyalkyl group,  $-\text{R}^i\text{SiR}^a\text{R}^b\text{R}^c$  or a benzyl group, wherein  $R^i$  is an alkylene group;

$R^e$  is an alkyl group, an allyl group, a benzyl group, an aryl group, an alkoxy group, or  $-\text{NR}^g\text{R}^h$ , wherein  $R^g$  and  $R^h$  are independently H, an alkyl group or an aryl group;

$R^3$  is  $(\text{CH}_2)_n$  where  $n$  is an integer in the range of 0 to 5,  $-\text{CH}_2\text{CH}(\text{CH}_3)-$ ,  $-\text{CH}=\text{CH}-$ ,  $-\text{CH}=\text{C}(\text{CH}_3)-$ , or  $-\text{C}\equiv\text{C}-$ ;

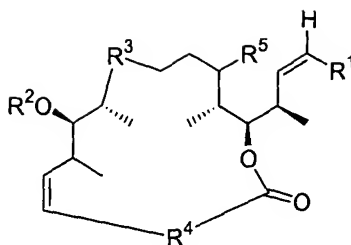
$R^4$  is  $(\text{CH}_2)_p$  where  $p$  is an integer in the range of 4 to 12,  $-(\text{CHR}^{k1})_{y1}(\text{CHR}^{k2})_{y2}(\text{CHR}^{k3})_{y3}(\text{CHR}^{k4})_{y4}(\text{CHR}^{k5})_{y5}\text{C}(\text{R}^{s1})=\text{C}(\text{R}^{s2})\text{C}(\text{R}^{s3})=\text{C}(\text{R}^{s4})-$ ,  $-(\text{CHR}^{k1})_{y1}(\text{CHR}^{k2})_{y2}(\text{CHR}^{k3})_{y3}(\text{CHR}^{k4})_{y4}(\text{CHR}^{k5})_{y5}\text{CH}(\text{R}^{s1})\text{CH}(\text{R}^{s2})\text{C}(\text{R}^{s3})=\text{C}(\text{R}^{s4})-$ ,  $-(\text{CHR}^{k1})_{y1}(\text{CHR}^{k2})_{y2}(\text{CHR}^{k3})_{y3}(\text{CHR}^{k4})_{y4}(\text{CHR}^{k5})_{y5}\text{C}(\text{R}^{s1})=\text{C}(\text{R}^{s2})\text{CH}(\text{R}^{s3})\text{CH}(\text{R}^{s4})-$ ,  $-(\text{CHR}^{k1})_{y1}(\text{CHR}^{k2})_{y2}(\text{CHR}^{k3})_{y3}(\text{CHR}^{k4})_{y4}(\text{CHR}^{k5})_{y5}\text{CH}(\text{R}^{s1})\text{CH}(\text{R}^{s2})\text{CH}(\text{R}^{s3})\text{CH}(\text{R}^{s4})-$ ,

wherein  $y1$  and  $y2$  are 1 and  $y3$ ,  $y4$  and  $y5$  are independently 0 or 1,  $R^{k1}$ ,  $R^{k2}$ ,  $R^{k3}$ ,  $R^{k4}$  and  $R^{k5}$  are independently H,  $-\text{CH}_3$ , or  $\text{OR}^{2a}$ , and  $R^{s1}$ ,  $R^{s2}$ ,  $R^{s3}$ ,  $R^{s4}$  are independently H or  $\text{CH}_3$ , wherein  $R^{2a}$  is H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ ; and

$R^5$  is H or  $\text{OR}^{2b}$ , wherein  $R^{2b}$  is H, an alkyl group, a benzyl group, a trityl group,  $-\text{SiR}^a\text{R}^b\text{R}^c$ ,  $\text{CH}_2\text{OR}^d$ , or  $\text{COR}^e$ ; and

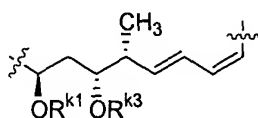
$R^{10}$  is H

to a second compound with the formula



30. The process of Claim 29 wherein  $R^1$  is alkenyl;  $R^3$  is  $\text{CH}_2\text{CH}(\text{CH}_3)$  or  $\text{CH}=\text{C}(\text{CH}_3)$ ; and  $R^4$  is  $-(\text{CHR}^{k1})_{y1}(\text{CHR}^{k2})_{y2}(\text{CHR}^{k3})_{y3}(\text{CHR}^{k4})_{y4}(\text{CHR}^{k5})_{y5}\text{C}(\text{R}^{s1})=\text{C}(\text{R}^{s2})\text{C}(\text{R}^{s3})=\text{C}(\text{R}^{s4})-$  wherein  $y1-y4$  are 1,  $y5$  is 0,  $R^{k1}$  and  $R^{k3}$  are  $\text{R}^{2a}$ ,  $R^{k2}$  is H,  $R^{k4}$  is  $\text{CH}_3$ ,  $\text{R}^{s1}-\text{R}^{s4}$  are H, and  $\text{R}^5$  is  $\text{OR}^{2b}$ .

31. The process of claim 29 wherein  $R^1$  is  $\text{CH}=\text{CH}_2$  and  $R^4$  is



32. The process of claim 28 wherein the first compound is reacted with 2,4,6-trichlorobenzoylchloride.

33. The process of claim 29 wherein the first compound is reacted with 2,4,6-trichlorobenzoylchloride.